510(k) Summary

MAR 11 2010

Applicant Contact Information:

Applicant:	Instrumentation Laboratory Co.
Address:	113 Hartwell Avenue Lexington, MA 02421
Contact Person:	Carol Marble, Regulatory Affairs Director
Phone Number:	781-861-4467
Fax Number:	781-861-4207
Preparation Date:	March 3, 2010

Device Trade Names:

HemosIL™ AcuStar Anti-Cardiolipin IgG
HemosIL™ AcuStar Anti-Cardiolipin IgM
HemosIL™ AcuStar Anti-Cardiolipin IgG Controls
HemosIL™ AcuStar Anti-Cardiolipin IgM Controls

Regulatory Information:

Classification Name:	Multiple Autoantibodies Immunological Test System; Single (Specified) Analyte Controls (Assayed and Unassayed)
Device Class:	Class II (Assays); Class I (Controls)
Regulation No.:	21 CFR 866.5660 (Assays); 21 CFR 862.1660 (Controls)
Product Code:	MID (System Test, Anti-Cardiolipin Immunological); JJX (Controls)
Panel:	Immunology (82)

Identification of Predicate Devices:

K022992	REAADS Anti-Cardiolipin IgG/IgM Semi-Quantitative Test Kit

Device Indications for Uses:

- **HemosIL AcuStar Anti-Cardiolipin IgG:** Fully automated chemiluminescent immunoassay for the semi-quantitative measurement of anti-cardiolipin (aCL) IgG antibodies in human citrate plasma and serum on the ACL™ AcuStar as an aid in the diagnosis of thrombotic disorders related to primary and secondary Antiphospholipid Syndrome (APS) when used in conjunction with other laboratory and clinical findings.
- **HemosIL AcuStar Anti-Cardiolipin IgM:** Fully automated chemiluminescent immunoassay for the semi-quantitative measurement of anti-cardiolipin (aCL) IgM antibodies in human citrated plasma and serum on the ACL™ AcuStar, as an aid in the diagnosis of thrombotic disorders related to primary and secondary Antiphospholipid Syndrome (APS) when used in conjunction with other laboratory and clinical findings.
- **HemosIL AcuStar Anti-Cardiolipin IgG Controls:** For the quality control of the Anti-Cardiolipin IgG assay performed on the ACL AcuStar.
- **HemosIL AcuStar Anti-Cardiolipin IgM Controls:** For the quality control of the Anti-Cardiolipin IgM assay performed on the ACL AcuStar.

Device Description:

- **HemosIL AcuStar Anti-Cardiolipin IgG** is a chemiluminescent two-step immunoassay consisting of magnetic particles coated with cardiolipin and human purified β_2GPI which capture, if present, the aCL antiphospholipid antibodies from the sample. After incubation, magnetic separation and a wash step, a tracer consisting of an isoluminol-labeled anti-human IgG antibody is added and may bind with the captured aCL IgG on the particles. After a second incubation, magnetic separation, and wash step, reagents that trigger the luminescent reaction are added, and the emitted light is measured as relative light units (RLUs) by the ACL AcuStar optical system. The RLUs are directly proportional to the aCL IgG concentration in the sample.

  The ACL AcuStar aCL IgG assay utilizes a 4 Parameter Logistic Curve (4PLC) fit data reduction method to generate a Master Curve. The Master Curve is predefined and lot dependent and it is stored in the instrument through the cartridge barcode. With the measurement of calibrators, the predefined Master Curve is transformed to a new, instrument specific 4PLC Working Curve. The concentration values of the calibrators are included in the calibrator tube barcodes.

- **HemosIL AcuStar Anti-Cardiolipin IgM** is a chemiluminescent two-step immunoassay consisting of magnetic particles coated with cardiolipin and human purified β_2GPI which capture, if present, the aCL antiphospholipid antibodies from the sample. After incubation, magnetic separation, and a wash step, a tracer consisting of an isoluminol-labeled anti-human IgM antibody is added and may bind with the captured aCL IgM on the particles. After a second incubation, magnetic separation, and wash step, reagents that trigger the luminescent reaction are added, and the emitted light is measured as relative light units (RLUs) by the ACL AcuStar optical system. The RLUs are directly proportional to the aCL IgM concentration in the sample.

  The ACL AcuStar aCL IgM assay utilizes a 4 Parameter Logistic Curve (4PLC) fit data reduction method to generate a Master Curve. The Master Curve is predefined and lot dependent and it is stored in the instrument through the cartridge barcode. With the measurement of calibrators, the predefined Master Curve is transformed to a new, instrument specific 4PLC Working Curve. The concentration values of the calibrators are included in the calibrator tube barcodes.

- **HemosIL AcuStar Anti-Cardiolipin IgG Controls:** The Low and High Anti-Cardiolipin IgG Controls are prepared by means of a dedicated process and contain different concentrations of human aCL IgG antibodies.
  - **Low Anti-Cardiolipin IgG Control:** Control intended for the assessment of precision and accuracy of the assay at the normal or around cut-off aCL IgG levels.
  - **High Anti-Cardiolipin IgG Control:** Control intended for the assessment of precision and accuracy of the assay at the abnormal aCL IgG levels.

- **HemosIL AcuStar Anti-Cardiolipin IgM Controls:** The Low and High Anti-Cardiolipin IgM Controls are prepared by means of a dedicated process and contain different concentrations of human aCL IgM antibodies.
  - **Low Anti-Cardiolipin IgM Control:** Control intended for the assessment of precision and accuracy of the assay at the normal or around cut-off aCL IgM levels.
  - **High Anti-Cardiolipin IgM Control:** Control intended for the assessment of precision and accuracy of the assay at the abnormal aCL IgM levels.

Technological Characteristic Summary:

The HemosIL AcuStar Anti-Cardiolipin IgG assay used with HemosIL AcuStar Anti-Cardiolipin IgG Controls and HemosIL AcuStar Anti-Cardiolipin IgM assay used with HemosIL AcuStar Anti-Cardiolipin IgM Controls are equivalent to the currently marketed REAADS Anti-Cardiolipin IgG/IgM Semi-Quantitative Test Kit (K022992).

Substantial Equivalence Comparison Table:

Characteristic	New Device: HemosIL AcuStar Anti-Cardiolipin IgG	Predicate Device: REAADS Anti-Cardiolipin IgG (K022992)	New Device: HemosIL AcuStar Anti-Cardiolipin IgM	Predicate Device: REAADS Anti-Cardiolipin IgM (K022992)
Intended Use	Fully automated chemiluminescent immunoassay for the semi-quantitative measurement of anti-cardiolipin (aCL) IgG antibodies in human citrate plasma and serum on the ACL™ AcuStar as an aid in the diagnosis of thrombotic disorders related to primary and secondary Antiphospholipid Syndrome (APS) when used in conjunction with other laboratory and clinical findings.	An enzyme-linked immunoassay for the semi-quantitative determination of anti-cardiolipin IgG antibodies in human serum or plasma. For the detection and semi-quantitation of anti-cardiolipin antibodies in individuals with systemic lupus erythematosus (SLE) and lupus-like disorders (anti-phospholipid syndrome).	Fully automated chemiluminescent immunoassay for the semi-quantitative measurement of anti-cardiolipin (aCL) IgM antibodies in human citrated plasma and serum on the ACL™ AcuStar, as an aid in the diagnosis of thrombotic disorders related to primary and secondary Antiphospholipid Syndrome (APS) when used in conjunction with other laboratory and clinical findings.	An enzyme-linked immunoassay for the semi-quantitative determination of anti-cardiolipin IgM antibodies in human serum or plasma. For the detection and semi-quantitation of anti-cardiolipin antibodies in individuals with systemic lupus erythematosus (SLE) and lupus-like disorders (anti-phospholipid syndrome).
Technology	Two-step chemiluminescent immunoassay	ELISA	Two-step chemiluminescent immunoassay	ELISA
Assay format	Semi-quantitative	Same	Semi-quantitative	Same
Sample type	Serum or Citrated Plasma	Same	Serum or Citrated Plasma	Same
Calibrator	Two Calibrator Levels (Included in test kit)	Three Calibrator Levels (Included in Test Kit)	Two Calibrator Levels (Included in test kit)	Three Calibrator Levels (Included in Test Kit)
Quality Control	Low and High Controls (Sold Separately)	Normal and Positive Controls (Included in Test Kit)	Low and High Controls (Sold Separately)	Normal and Positive Controls (Included in Test Kit)
Clinical Cut-off	20 U/mL	23 GPL	20 U/mL	11 MPL

Summary of Performance Data:

Precision

Within run and total precision assessed over multiple runs using the respective assays with their two control levels and a plasma sample giving the following results:

HemosIL AcuStar Anti-Cardiolipin IgG

ACL AcuStar	Mean (U/mL)	CV% (Within run)	CV% (Total)
Low aCL IgG Control	16.4	6.8%	8.2%
High aCL IgG Control	158	6.1%	6.9%
aCL IgG plasma sample A	13.8	4.0%	4.4%
aCL IgG plasma sample B	19.1	3.7%	4.2%
aCL IgG plasma sample C	47.2	4.8%	7.2%
aCL IgG plasma sample D	515	3.7%	5.4%
aCL IgG plasma sample E	1029	3.5%	6.7%

HemosIL AcuStar Anti-Cardiolipin IgM

ACL AcuStar	Mean (U/mL)	CV% (Within run)	CV% (Total)
Low aCL IgM Control	6.79	3.3%	4.9%
High aCL IgM Control	86.1	3.5%	4.0%
aCL IgG plasma sample A	14.7	3.0%	3.3%
aCL IgM plasma sample B	19.2	2.6%	4.7%
aCL IgG plasma sample C	19.5	2.6%	2.9%
aCL IgG plasma sample D	207	3.6%	4.4%
aCL IgG plasma sample E	556	6.8%	8.4%

Summary of Performance Data (Cont.):

Outcome Studies

An outcome study was performed on 321 frozen citrated plasmas. These plasmas were from 6 different groups, including selected individuals diagnosed as primary APS (PAPS), secondary APS (SAPS), systemic lupus erythematosus (SLE) but not APS and SLE-like by standard objective tests. The fifth group was patients with cardiovascular disorders but not classified in the previous four groups. A group of apparently healthy people was also included.

The results summarized below are based on a cut-off of 20 U/mL:

HemosIL AcuStar Anti-Cardiolipin IgG

Patient group	N	N (Positive)	% Positive
PAPS	23	13	56.5%
SAPS	69	37	53.6%
SLE	115	9	7.8%
SLE-like	5	0	0.0%
Others	6	1	16.7%
Normals	103	0	0.0%

Considering as positive the patient groups PAPS and SAPS the clinical Sensitivity, Specificity and Overall % Agreement were:

System	N	Sensitivity (95% CI)	Specificity (95% CI)	% Agreement (95% CI)
ACL AcuStar	321	54.3% (43.6%-64.8%)	95.6% (92.1%-97.9%)	83.8% (79.3%-87.7%)

HemosIL AcuStar Anti-Cardiolipin IgM

Patient group	N	N (Positive)	% Positive
PAPS	23	8	34.8%
SAPS	69	23	33.3%
SLE	115	10	8.7%
SLE-like	5	0	0.0%
Others	6	1	16.7%
Normals	103	1	1.0%

Considering as positive the patient groups PAPS and SAPS, the clinical Sensitivity, Specificity and Overall % Agreement were:

System	N	Sensitivity (95% CI)	Specificity (95% CI)	Agreement (95% CI)
ACL AcuStar	321	33.7% (24.2%-44.3%)	94.8% (91.0%-97.3%)	77.3% (72.3%-81.7%)

Summary of Performance Data (Cont.):

Method Comparison Studies

HemosIL AcuStar Anti-Cardiolipin IgG

The samples used in the clinical performance study that were within the compared methods' test ranges were measured in a Method Comparison study with REAADS Anti-Cardiolipin IgG Semi-Quantitative Test Kit. % Positive, Negative and Overall Agreement were:

		ELISA Assay	
HemosIL AcuStar aCL IgG		Negative	Positive
	Negative	76	7
	Positive	25	28

Predicate Device	N	% Positive Agreement (95% CI)	% Negative Agreement (95% CI)	% Overall Agreement (95% CI)
ELISA Assay	136	80.0% (63.1%-91.6%)	75.2% (65.7%-83.3%)	76.5% (68.4%-83.3%)

HcmosIL AcuStar Anti-Cardiolipin IgM

The samples used in the clinical performance study that were within the compared methods' test ranges were measured in a Method Comparison study with REAADS Anti-Cardiolipin IgM Semi-Quantitative Test Kit. % Positive, Negative and Overall Agreement were:

		ELISA Assay	
HemosIL AcuStar aCL IgM		Negative	Positive
	Negative	190	41
	Positive	4	32

Predicate Device	N	% Positive Agreement (95% CI)	% Negative Agreement (95% CI)	% Overall Agreement (95% CI)
ELISA Assay	267	43.8% (32.2%-55.9%)	97.9% (94.8%-99.4%)	83.1% (78.1%-87.4%)

DEPARTMENT OF HEALTH & HUMAN SERVICES Public Health Service

Food and Drug Administration
10903 New Hampshire Avenue
Document Mail Center-WO66-G609
Silver Spring, MD 20993-0002

Instrumentation Laboratory, Inc.
c/o Ms. Carol Marble
Regulatory Affairs Director
113 Hartwell Avenue
Lexington, MA 02421

MAR 1 1 2010

Re: k092181
Trade/Device Name: HemoSIL™ AcuStar Anti-Cardiolipin IgG
HemoSIL™ AcuStar Anti-Cardiolipin IgM
HemoSIL™ AcuStar Anti-Cardiolipin IgG Controls
HemoSIL™ AcuStar Anti-Cardiolipin IgM Controls
Regulation Number: 21 CFR §866.5660
Regulation Name: Multiple autoantibodies immunological test system
Regulatory Class: Class II
Product Code: MID, JJX
Dated: March 3, 2010
Received: March 8, 2010

Dear Ms. Marble:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration.

If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 898. In addition, FDA may publish further announcements concerning your device in the Federal Register.

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's requirements, including, but not limited to: registration and listing (21

CFR Part 807); labeling (21 CFR Parts 801 and 809); medical device reporting (reporting of medical device-related adverse events) (21 CFR 803); and good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820). This letter will allow you to begin marketing your device as described in your Section 510(k) premarket notification. The FDA finding of substantial equivalence of your device to a legally marketed predicate device results in a classification for your device and thus, permits your device to proceed to the market.

If you desire specific advice for your device on our labeling regulation (21 CFR Parts 801 and 809), please contact the Office of *In Vitro* Diagnostic Device Evaluation and Safety at (301) 796-5450. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21 CFR Part 807.97). For questions regarding the reporting of adverse events under the MDR regulation (21 CFR Part 803), please go to http://www.fda.gov/MedicalDevices/Safety/ReportaProblem/default.htm for the CDRH's Office of Surveillance and Biometrics/Division of Postmarket Surveillance.

You may obtain other general information on your responsibilities under the Act from the Division of Small Manufacturers, International and Consumer Assistance at its toll-free number (800) 638-2041 or (301) 796-7100 or at its Internet address http://www.fda.gov/MedicalDevices/ResourcesforYou/Industry/default.htm.

Sincerely yours,

Maria M. Chan

Maria M. Chan, Ph.D.
Director
Division of Immunology and Hematology Devices
Office of In Vitro Diagnostic Device Evaluation and Safety
Center for Devices and Radiological Health

Enclosure

Indications for Use Statement

510(k) Number (if known): k092181

Devices Name: HemosIL™ AcuStar Anti-Cardiolipin IgG
HemosIL™ AcuStar Anti-Cardiolipin IgG Controls

Indications for Use:

- **HemosIL AcuStar Anti-Cardiolipin IgG:** Fully automated chemiluminescent immunoassay for the semi-quantitative measurement of anti-cardiolipin (aCL) IgG antibodies in human citrate plasma and serum on the ACL™ AcuStar as an aid in the diagnosis of thrombotic disorders related to primary and secondary Antiphospholipid Syndrome (APS) when used in conjunction with other laboratory and clinical findings.

- **HemosIL AcuStar Anti-Cardiolipin IgG Controls:** For the quality control of the Anti-Cardiolipin IgG assay performed on the ACL AcuStar.

Prescription Use √ AND/OR Over-The-Counter Use _____
(Part 21 CFR 801 Subpart D) (21 CFR 807 Subpart C)

(PLEASE DO NOT WRITE BELOW THIS LINE - CONTINUE ON ANOTHER PAGE IF NEEDED)

Concurrence of CDRH, Office of In Vitro Diagnostic Devices (OIVD)

Maria M Chan
Division Sign-Off

Office of In Vitro Diagnostic Device Evaluation and Safety

510(k) K092181

Indications for Use Statement

510(k) Number (if known): K092181

Devices Name: HemosIL™ AcuStar Anti-Cardiolipin IgM
HemosIL™ AcuStar Anti-Cardiolipin IgM Controls

Indications for Use:

- **HemosIL AcuStar Anti-Cardiolipin IgM:** Fully automated chemiluminescent immunoassay for the semi-quantitative measurement of anti-cardiolipin (aCL) IgM antibodies in human citrated plasma and serum on the ACL™ AcuStar, as an aid in the diagnosis of thrombotic disorders related to primary and secondary Antiphospholipid Syndrome (APS) when used in conjunction with other laboratory and clinical findings.
- **HemosIL AcuStar Anti-Cardiolipin IgM Controls:** For the quality control of the Anti-Cardiolipin IgM assay performed on the ACL AcuStar.

Prescription Use √ AND/OR Over-The-Counter Use _____
(Part 21 CFR 801 Subpart D) (21 CFR 807 Subpart C)

(PLEASE DO NOT WRITE BELOW THIS LINE - CONTINUE ON ANOTHER PAGE IF NEEDED)

Concurrence of CDRH, Office of In Vitro Diagnostic Devices (OIVD)

Division Sign-Off

Office of In Vitro Diagnostic Device Evaluation and Safety

510(k) K092181